

5440-19 Middle Grades

The holder is authorized to teach one or more of the following content areas – Science, History/Social Sciences, English Language Arts, Mathematics – in grades 5-9, as specified on the endorsement.

In order to qualify for this endorsement, the candidate shall demonstrate that he/she meets the knowledge and performance standards for professional knowledge of middle grades education as well as the knowledge and performance standards for one or more of the core content areas of the middle grades curriculum as follows:

Knowledge Standards – Professional Knowledge:

Demonstrates a thorough understanding of the developmental nature and needs of early adolescents, and of ways to structure the learning environment and organize, implement, and assess curriculum and instruction to maximize students' learning and development. Specifically the educator understands:

The intellectual, physical, social, emotional, and psychological changes that occur during early adolescence, including the wide variation in how students learn and typically develop, and the variety of economic, social, and cultural influences that affect each student's life

How to work cooperatively and respectfully with all families to support students' learning and development

Organizational techniques that support early adolescents' developmental needs for close, trusting relationships between adults and students, and among students

Curricular design and instructional techniques that engage the unique intellectual and psychosocial nature and needs of early adolescent students

Embedded literacy strategies that promote the reading and writing skill development of all students across the content areas

Performance Standards – Professional Knowledge:

Middle Grades educators draw upon their understanding of early adolescent development and learning theory; the interests and needs of their students; and their knowledge of subject matter, integrative curriculum, and assessment to design and implement learning experiences that enable students to confront, explore, and understand challenging concepts and issues and improve skills in purposeful and engaging ways. Specifically, the educator:

Uses proactive, collaborative strategies to promote parent-teacher and parent-student communication about student learning and to enhance parent-students relationships

Provides an appropriate learning environment that meets the developmental needs of early adolescents in the areas of identity, intimacy, autonomy, and affiliation

Designs and implements curricula that are personally and socially relevant, that incorporate real world topics, and that are based upon integrative themes that bring to bear the habits of mind and dispositions of various disciplines

Collaborates with other teachers to integrate themes, skills, and content from multiple disciplinary areas within the classroom curriculum

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Implements curriculum using a variety of instructional strategies to ensure that all students learn the central concepts within the disciplines, are engaged in active learning, and to promote individual development and social cooperation

Incorporates embedded literacy strategies throughout all instruction

Uses assessment strategies and methodologies that require students to take increasing responsibility for understanding themselves as learners, evaluating their own work, and setting their own learning goals

Additional Requirements:

A minimum of a practicum, or the equivalent, at the middle grades level (5-9) in science, social studies, math, or English.

Knowledge Standards – English Language Arts:

Demonstrates knowledge of research-based principles and processes underlying literacy development, and the components of effective literacy instruction, as delineated in current national professional standards¹ and reflected in *Vermont's Framework of Standards and Learning Opportunities*. Specifically, the educator understands and/or knows:

Development of Oral Language and Literacy – Processes, principles, and dimensions of oral language acquisition; the relationship between oral language development and literacy development; the impact of physical, emotional, and cultural factors on language development and acquisition of reading and writing; role of metacognition in language and literacy development; the elements of effective verbal and non-verbal communication

Literature and Media – A wide variety of quality, age-appropriate literature and non-print media (i.e., film, video) across genres, eras, cultures, and subcultures; literary elements and strategies for textual analysis

Language and Word Study – The purposes of language and approaches to analyzing language; etymology of the English language; the pronunciation of English phonemes and their graphemes; the developmental progression of phonological awareness; vocabulary development and its relationship to literacy acquisition; the developmental stages of spelling and morphological analysis

Reading Comprehension and Fluency – Reading as the process of constructing meaning from text; the components of fluency; factors that influence comprehension and fluency; typical elements and features of narrative and expository texts, and how readers' awareness of these features supports comprehension; cognitive strategies and instructional approaches for supporting comprehension and fluency

Written Expression – The composing processes that writers use, and planning strategies most appropriate for particular kinds of writing; dimensions of quality writing and types of writing; the conventions of written English; uses of writing portfolios and benchmarks and standards for various age/grade levels

Assessment and Adaptation of Literacy Instruction – The importance of individualizing the literacy program to address the needs and strengths of learners; a variety of valid and efficient language arts

¹ e.g., *Standards for Reading Professionals* (International Reading Association, 1998); *Every Child Reading: A Professional Development Guide* (Learning First Alliance, 2000); *Standards for the English Language Arts* (International Reading Association/National Council of Teachers of English, 1996)

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assessments appropriate for different purposes; the observable characteristics of a variety of reading and writing difficulties; strategies for modifying literacy instruction to support the needs of individual learners, including English Language Learners (ELL's)

Performance Standards – English Language Arts:

Implements a language arts curriculum that fosters interest and growth in all aspects of oral and written literacy in order to provide students with the communication skills necessary to understand and influence their own lives and to learn about the world. Specifically, the educator:

Literacy Development through Literature and Media –

Uses a wide variety of fiction and non-fiction textual materials, including some of students' own selection, to increase students' motivation to read independently for information, pleasure and personal growth

Selects and reads quality literature aloud and applies tools of literary analysis to the facilitation of discussions of central themes and ideas within literature and non-print media

Uses active instructional strategies to promote various dimensions of oral language development, and to facilitate critical analysis and interpretation

Teaches students to distinguish between fact, opinion, and interpretation, and how to analyze and judge the credibility of print and non-print communications

Models, fosters, and teaches active listening in order to enable thoughtful, equitable, and respectful classroom discourse

Implements strategies to include parents as partners in the literacy development of their children

Models and teaches the elements of effective verbal and non-verbal communication

Language and Word Study –

Teaches students to use syntactic, semantic, and graphophonemic cues to identify and spell words

Employs effective instructional strategies for the development of a broad, independent vocabulary

Reading Comprehension and Fluency –

Provides explicit instruction in how to flexibly use pre-, during, and post-reading cognitive strategies to understand, analyze, and interpret a variety of types of texts

Employs a range of instructional approaches to support comprehension across the content areas

Uses instructional strategies to build or strengthen fluency

Written Expression –

Organizes and implements a writing portfolio program that promotes high quality writing by including a variety of instructional strategies and topics to teach purposes, structures, and composition

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Uses required writing rubrics and benchmarks for assessing student writing, and teaches students to use these to analyze their own writing

Models and teaches appropriate grammar, usage, and mechanics

Assessment and Adaptation of Literacy Instruction –

Uses a variety of valid assessment strategies to regularly evaluate students' progress in all of the individual dimensions of literacy development

Uses the results of literacy assessments to adjust and/or target instruction, to flexibly group students, when needed, and to appropriately match students with reading material

Additional Requirements:

A minor in English or Comparative Literature, or the equivalent in undergraduate and/or graduate coursework

Knowledge Standards – Mathematics:

Demonstrates knowledge of mathematical content, concepts, and skills delineated in current national professional standards² and in *Vermont's Framework of Standards and Learning Opportunities* including:

National Council of Teachers of Mathematics (NCTM) process skills as vehicles for acquiring and using mathematics content knowledge

Typical misconceptions in mathematical reasoning held by early adolescent students

Specific content recommended for middle grades teachers in *The Mathematical Education of Teachers* (Conference Board of the Mathematical Sciences, 2001) including:

Numbers and Operations – Mathematics underlying the procedures used for operating on whole numbers and rational numbers; distinctions among whole numbers, integers, rational numbers, and real numbers; conversion among fractions, decimals, and percents; number and operation properties, including mental computation and computational estimation; fundamental ideas of number theory; scientific notation; use of ratios and proportions to represent qualitative relationships; inverse relationships; equations and inequalities

Algebra and Functions – Algebra as a symbolic language, as a problem solving tool, as generalized arithmetic and generalized quantitative reasoning, and as a way of modeling physical situations; variables and functions and how they can be represented; linear functions as a way of representing proportional relationships; patterns of change associated with linear, quadratic, and exponential functions; translation of information from one representation to another

² e.g. *The Mathematical Education of Teachers* (Conference Board of the Mathematical Sciences, 2001), *Principles and Standards for School Mathematics* (NCTM, 2000)

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Geometry and Measurement – Justification or disproof of conjectures about geometric shapes; derivation of measurement formulas; how rigid motions in the plane result in congruent figures; how similar figures result from a dilation, and the role of proportional relationships in determining similarity; connection of geometry to other topics and contexts such as nature and art; analysis and generalization of geometric patterns; conceptual underpinnings of calculus

Data Analysis, Statistics, and Probability – Prediction of patterns, through theory and simulation, within simple probability models; drawing of conclusions with measures of uncertainty by applying basic concepts of statistics; applications of statistics and probability across different fields; use of technology effectively in statistical practice, including determination of which technology is appropriate for a particular problem

Performance Standards – Mathematics:

Implements a mathematics curriculum that integrates mathematical inquiry skills and mathematical content, and enables conceptual development and development of the habits of mind that support mathematical inquiry. Specifically, the educator:

Anticipates, elicits, and corrects typical errors and misconceptions in mathematical reasoning

Models the habits of mind of flexibility and perseverance that support mathematical learning

Designs and incorporates mathematical tasks/activities that enable students to investigate, explore, and discover structures and relationships; solidify basic mathematical skills; extend and generalize mathematical concepts; create and use mathematical models; apply concrete, formal, and informal strategies to solve mathematical problems; formulate and solve problems individually and collaboratively; and justify and communicate their conclusions orally and in writing

Conveys the real world applications of mathematical ideas, and the interconnections among mathematical ideas and between mathematics and other disciplines

Communicates mathematical ideas using appropriate mathematical language and representations, and teaches students to use both to communicate about mathematical ideas

Uses required mathematics scoring guides and benchmarks to evaluate student work and teaches students to use both to evaluate their own work

Integrates appropriate manipulatives and technological tools to facilitate mathematical problem solving and communication

Conveys to students how the development of mathematical theory and understanding is a historical process with continuous creation of new knowledge and refinement or rejection of “old” knowledge

Conveys to students the roles and responsibilities of mathematicians with respect to social, economic, cultural, and political systems, and provides them with opportunities to actively explore the full scope of career choices available to people in mathematics

Demonstrates sensitivity to inequities in mathematics teaching and careers by incorporating specific instructional strategies that promote equity

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Additional Requirements:

A minor in mathematics, or the equivalent in undergraduate and/or graduate coursework

Knowledge Standards – History and Social Sciences:

Demonstrates knowledge of historical and social science content, concepts, and skills delineated in current national professional standards³ and in Vermont's Framework of Standards and Learning Opportunities including:

Methods of historical and social science investigation and analysis, including criteria for critical evaluation of evidence and data, and use of primary sources and varied perspectives to interpret historical events and analyze public issues

The development of students' historical thinking, including common misconceptions in the historical thinking of students

History – Multiple perspectives on significant eras, developments, and turning points in ancient and modern history; causes and effects in human society; forces of historical and cultural continuity and change

Cultural Geography – An understanding of the world in spatial terms, the physical and human characteristics of places and regions, human systems, the interaction of environment and society

Diversity, Unity, Identity, and Interdependence – Culture, including cultural identity, expressions, and universals; the origins of conflict; consequences of discrimination, stereotyping, and prejudice on individuals and groups

Citizenship – Forms of government and their underlying concepts; principles and responsibilities of democratic citizenship; principles of American federalism; origins and evolution of the concepts of equality, justice, freedom, human, and civil rights

Economics – Forms of economic systems; consequences of economic systems on people and environments

Performance Standards – History and the Social Sciences:

Implements a history and social sciences curriculum that integrates historical and social science content, concepts, and inquiry skills, and enables students to view and analyze communities, societies and/or cultures, and events as apprentice historians and social scientists, to interpret social issues, and to participate purposefully toward the common good in society. Specifically, the educator:

Chooses developmentally appropriate activities to teach historical/social science concepts and processes

Models how historians, geographers, and other social scientists view, analyze, and interpret the world

³ e.g., *National Standards for History* (National Center for History in the Schools, 1996), *Curriculum Standards for Social Studies* (National Council for the Social Studies, 1994), *Geography for Life* (National Geographic Research & Exploration, 1994)

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Provides opportunities for students to examine and interpret historical and contemporary events and issues through active learning strategies such as research, role-play, debate, and discussion

Provides opportunities for students to participate in community-based investigations and service projects, and to access and use local resources

Creates or adopts instructional and assessment tasks that teach students to analyze and interpret primary and secondary sources of all types, identify webs of cause and effect, and differentiate between fact, opinion, and interpretation

Provides opportunities for students to use historical, geographical, and social science research methods, tools, and technologies

Teaches students how to read and understand historical narratives, issue analyses, and persuasive essays, and how to write well-crafted pieces in these genres, including preparing portfolio pieces

Models respect for students' diverse opinions and backgrounds in all classroom interactions, and teaches students how to engage in civil discussions about controversial issues

Additional Requirements:

A minor in history, political science, economics, geography, or a combination thereof, or the equivalent in undergraduate and/or graduate coursework. (Coursework in cultural anthropology and non-Western area studies may be counted toward geography.)

Knowledge Standards – Science:

Demonstrates knowledge of scientific content, concepts, and skills delineated in current national professional standards⁴ and in *Vermont's Framework of Standards and Learning Opportunities* including:

Scientific method; investigatory processes and procedures; the nature of theory; roles and responsibilities of scientists; history of science

Typical scientific misconceptions or naïve ideas held by early adolescents

Life Sciences – Cell structure and function; anatomy and physiology; molecular basis of heredity; biological evolution; interdependence of organisms; matter, energy and organization in living systems; behavior of organisms

Physical Sciences – The structure of atoms; structure and properties of matter; chemical reactions; motion and forces; conservation of energy and increase in disorder; interactions of energy and matter

Earth, Environmental, and Atmospheric Sciences – The Earth as an integrated system of chemical, physical and biological processes interconnecting the geosphere, hydrosphere, atmosphere, and biosphere; the origins and evolution of the Earth, solar system, and universe, and forces effecting and shaping them over time

⁴ e.g. *National Science Education Standards* (National Academy of Sciences, 1996), *Benchmarks for Science Literacy* (Oxford University Press, 1993)

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Living and Non-Living Systems – The concept of living and non-living systems as collections of interrelated parts and interconnected systems; continuity and change in living and non-living systems from the micro to the macro scale; how personal and collective actions can affect the sustainability of interrelated systems

Performance Standards -- Science:

Implements a science curriculum that integrates scientific inquiry skills and science content, and enables conceptual development and development of the habits of mind that support scientific inquiry. Specifically, the educator:

Anticipates and elicits the naïve scientific ideas, emerging concepts, and/or misconceptions that students are likely to have prior to instruction

Models the skills and habits of mind inherent in scientific inquiry

Asks scientific questions that engage students and helps them to formulate meaningful scientific questions of their own

Designs and implements investigations and assessments that engage students in experimental design, data collection, data analysis, and problem solving, and that provide them with frequent interactions with the natural world as a regular part of the science program

Creates opportunities for students to collaboratively design and implement scientific investigations, and to present and discuss the results of their investigations

Organizes equipment, work, and learning spaces so that scientific investigations are carried out safely in accordance with state and national safety guidelines

Teaches forms of scientific communication including how to write clear, well-organized science reports; how to read sources of scientific information; and how to understand and use representation and scientific notation

Integrates physical, mathematical, scientific, and technological tools appropriate to students' ages and abilities in order to facilitate scientific inquiry

Conveys to students how the development of scientific theory and understanding is a historical process with continuous creation of new knowledge and refinement or rejection of “old” knowledge

Conveys to students the roles and responsibilities of scientists with respect to social, economic, cultural and political systems, and provides them with opportunities to actively explore the full scope of career choices available to people in the sciences

Demonstrates sensitivity to inequities in science teaching and careers by incorporating specific instructional strategies that promote equity

Additional Requirements:

A minor in biology, chemistry, physics, or earth/environmental/atmospheric sciences, or a combination thereof, or the equivalent in undergraduate and/or graduate coursework